ECVET – Curriculum

UNIT TEMPLATE

Institution:	Intercollege
Programme/Training Title:	Mechanical Installations Diploma
Unit Title:	**Plumbing systems (Interior) MTECH -150**
Unit Type (e.g. major, minor, elective):	Major
Unit Level:	EQF Level 5
Duration:	15 weeks (39 guided hrs - total 150 hrs)
Pre-requisites:	Thermodynamics MTECH 100
Instructor:	George Philippides
Number of ECVET credits:	6

Learning Outcomes

By completion of this unit the learner should be able to

1. **Describe** plumbing system, Domestic Cold Water, (DCW) & Domestic Hot Water, (DHW).
2. **Choose** the appropriate materials, components and various tools for the installation of DCW & DHW
3. **Install** all equipment (pumps, Hot Water cylinders, etc) for DCW & DHW according to specifications and drawing
4. **Modify** the design drawing according to an as built drawing

MTECH- 150 Plumbing systems (Interior)				
Learning outcomes By the end of this course a learner is expected to:	**Method of assessment**	**ECVET System**		**Estimated student work time in hours**
1. Describe plumbing (Domestic Cold Water, DCW & Domestic Hot Water, DHW) system, materials and installation.	• Mid-term and final exams • Class discussion • Class participation	K	• Understand various type of pipes and equipment • Identify method of installation	60
		S	• Interpreted Mechanical drawings	10
		C	• Not applicable	0
2. Choose the appropriate materials, components and various tools for the installation	• Final exams • Class discussion • Class participation • Workshop participation • Workshop report	K	• Describe method of installation	5
		S	• Install pipes and fittings for DCW & DHW system according to plants	20
		C	• Organize the installation of DCW+DHW with the right job sequence	5
3. Install all equipment (pumps, Hot Water cylinders, etc.) for	• Oral exercise and questions • Laboratory /	K	• Describe the equipment used in DCW+DHW installation • Understand the correct size and type of	20

DCW+DHW according to specifications and drawings	workshop report • Observation through workshop		equipment used in DCW+DHW installation	
		S	• Install the necessary equipment as per drawing	10
		C	• Compare various equipment	5
4. Modify the design drawing to an as built drawing	• Oral exercise and questions • Laboratory / workshop report • Observation through workshop	K	• Locate the difference between the design drawing and the exact installation on site	5
		S	• Draw differences on an as build drawing.	5
		C	• Modification of design drawing.	5
			TOTAL	**150**

Unit Content:

1. Basic Principles
   - Types and use of pipes
   - Pipes in series and in parallel arrangements
   - Open and closed systems
   - Series and parallel pumps arrangement
   - Head of pump, cavitation.
2. Water treatments and characteristics
   - Quality indicators of water
   - Health significance parameters (color, turbidity, taste, hardness, etc.)
   - Microorganisms and diseases
   - Water Treatment Processes (softening, Refining, Disinfection)
3. Plumping Installations
   - Working environment and jobs organization
   - Interpreted Mechanical drawings for plumbing installations
   - Identify and use various types of pipes, fittings, equipment use for plumbing installations
     - Types of pipes (Copper, Polypropylene, Polyethylene, etc.)
     - Types of fittings (couplings, valves, etc.)
     - Types of measuring devices (pressure gauge, temperature gauge, etc.)
     - Types of plumbing equipment / devices (filters, press control, differential temperature controller, expansion and pressure vessel, etc.)
   - Understand the use and operation of equipment, instruments for plumbing installations
   - Installation of hot and cold water supply systems by
     - Gravity

- Pressure pump
- Solar system (water heaters)

– Sewage / drainage installations
- UPVC pipes
- sewage and drainage pumps
- sanitary fixtures
- ventilations pipes

– Troubleshooting and repair plumbing installations.
– Protection and maintenance of plumbing.

Teaching methods:

The whole module is separate in to 2 parts, theoretical and practical part, which consist of lectures, examples, workshops and exercises.

The theoretical part will be conducted in classrooms and the practical part will take place in a specially designed space in the laboratory and will complement the theoretical modules where considered necessary.

In this program the main practice will consist of the following:

a. Identify equipment/parts of typical plumbing system
b. Installation of pressure system
c. Calculate the necessary pressure and flow of the system
d. Installation of a typical sewage system

Assessment methods

Assessment methods	Description	Assessment criteria	Share to final grade

Attendance and Participation	Records of regular student attendance	Total number of class absences and workshop participation	Absences 10%
Assignments 1	Calculation of required flow and heat for a typical two (2) level house	Correct calculations of flow and head, selection of suitable pressure pump	Report 10%
Mid-term examination	The syllabus up to week 6th is examined.	40% Multiple Choice Questions 60% Essay type questions	Written Exam 20%
Workshop 1	Installation of a typical sewage system	Correct installation of sewage pipes and fittings that will results to the correct installation of sanitary fixtures.	Workshop Report 10%
Workshop 2	Installation of a typical plumbing system complete with pressure pump	Correct installation of a pressure pump with necessary cold / hot water pipes and fittings and will results to the calculation of the necessary pressure and flow of the system	Workshop Report 10%
Final Examination	Comprehensive examination of the module's syllabus	20% Multiple Choice Questions 80% Essay type questions	Written Exam 40%

Required books:

Authors	Title	Editor	Year	ISBN
	Lecturer nodes			
Brickle S	ΘΕΡΜΟΥΔΡΑΥΛΙΚΕΣ ΕΓΚΑΤΑΣΤΑΣΕΙΣ	ΕΤΕ	1999	960-331-233-9

Suggested books:

Authors	Title	Editor	Year	ISBN
Brickle S	ΥΔΡΕΥΣΗ & ΘΕΡΜΑΝΣΗ ΠΟΣΙΜΟΥ ΝΕΡΟΥ - ΑΠΟΧΕΤΕΥΣΕΙΣ & ΕΓΚΑΤΑΣΤΑΣΕΙΣ ΥΓΙΕΙΝΗΣ	ETE	1999	960-331-400-5
Brickle S	ΑΥΤΟΜΑΤΙΣΜΟΙ ΘΕΡΜΟΫΔΡΑΥΛΙΚΩΝ ΕΓΚΑΤΑΣΤΑΣΕΩΝ	ETE	1999	978-960-331-232-1

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